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(54) Title: NUCLEATION AND GROWTH OF MAGNETIC METAL OXIDE NANOPARTICLES AND ITS USE**(57) Abstract**

A method for preparing nanoparticles coated with magnetic metal oxide, comprising the following steps: a) contacting an aqueous solution containing a soluble polymeric metal chelating agent with one or more soluble metal salts providing metal ions, wherein at least one of said metal ions is capable of forming an oxide which is magnetic, said metal ions being in amounts which do not exceed substantially the binding capacity of said chelating agent; b) causing said metal ions to be present in the oxidation states required for the formation of the oxide which is magnetic; c) maintaining the pH of the solution at the range of at least 7; d) introducing into the solution additional amounts of said metal salts; e) causing said additional metal ions to be present in the oxidation states required for the formation of the oxide which is magnetic; f) maintaining the pH of the solution at the range of at least 7; g) successively repeating the operations of steps d) to f) as many times as required to obtain monodispersed nanoparticles coated with magnetic metal oxide.

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